AMENDMENTS

IN THE SPECIFICATION

1) page one, first paragraph, please replace this paragraph with the following paragraph:

This Application is related to Patent Application Serial No. 09/262,910 (CS98-077) Su Yong Jie, Ravi Sankav and Han Zhi Ciang filed on 03/05/99 and to Serial No. 09/259,778 (CS98-078) by Sudipto R. Roy filed on 03/01/99, all of Chartered Semiconductor Manufacturing LTD of Singapore Technologies.

#1

2) page 1, second paragraph, replace the paragraph with the following paragraph:

The picture quality of liquid crystal displays that are created using as simple a design as seven segments to complex designs using millions of pixels is determined by the structure that is used to control the variation of the height of the pixels and the location of the external wires after wafer processing has been completed. There are known processes for creating insulating alignment posts based on preformed glass micro-spheres and rods; relatively low series resistance posts

#2

can be obtained by means of selective deposition of polysilicon and metallic silicide.

3) page 5, second and third paragraphs, replace these two paragraphs with the following paragraph:

Figs. 1 through 3 schematically illustrate in cross-sectional representation (Fig. 1) and top view (Figs. 2 and 3) a preferred embodiment of the device structure of the present invention.

Figs. 4 through 6 show the processing steps that are commonly shared between all five methods of the invention. The base silicon substrate with the formed metallic pixels on the display device is shown in Fig. 4.

4) page 5, fifth paragraph, replace this paragraph with the following paragraph:

Fig. 6 shows the optical interface layer deposition.

[5) page 5, sixth paragraph, replace this paragraph with the following paragraph:]

Fig. 7 shows the deposition of a thick layer of silicon oxide over the surface of the Optical Interface Layer (OIL).

#4 1/10 cont'd

[6) page 5, seventh paragraph, replace this paragraph with the following paragraph:]

Fig. 8 shows the photomask after excess silicon oxide has been removed from the surface of the OIL by applying wet etch processing.

7) page 5, after the fifth paragraph, add the paragraph:

#5 Figs. 7 and 8 show the first method of the invention, that is the method that applies wet etch processing, as follows:

8) page 6, before the first paragraph, add the following paragraph:

Figs. 9 and 10 show the second method of the invention, that is the method that applies amorphous silicon plasma etching, as follows:

9) page 6, before the third paragraph, add the following paragraph:

Figs. 11 through 13 show the third method of the invention, that is the method that provides nitride plug filling, as follows:

10) page 6, before the sixth paragraph, add the following paragraph:

Figs. 14 through 17 show the fourth method of the invention, that is the method that applies insulating material lift-off, as follows:

11) page 7, before the second paragraph, add the following paragraph:

Figs. 18 and 19 show the fifth method of the invention, that is the method that makes us of photosensitive polyimides, as follows:

12) page 6, replace the third paragraph with the paragraph:

#10 Fig. 11 shows the deposition of a thick layer of oxide over the surface of the OIL as a first step in forming plasma plugs of silicon nitride.

13) page 6, fifth paragraph, replace this paragraph with the following paragraph:

#11 Fig. 13 shows the result of silicon nitride etch-back and plasma oxide removal by applying wet etching.

14) page 6, sixth paragraph, replace this paragraph with the following paragraph:

#12 Fig. 14 shows the results of the successive deposition of a thick layer of photoresist, a layer of silicon oxide (SiO) deposited by thermal evaporation and a thin layer of photoresist over the surface of the OIL, this in preparation for the creation of the insulation material posts.

15) page 7, second paragraph, replace this paragraph with the following paragraph:

A13 Fig. 18 shows a cross-section after a layer of photosensitive polyimide has been deposited over the surface of the OIL.

16) page 7, third paragraph, replace this paragraph with the following paragraph:

A14 Fig. 19 shows a cross-section after photomasking and development of the photosensitive polyimide for formation of alignment posts.

17) page 7, fourth paragraph, replace this paragraph with the following paragraph:

A15 Fig. 20 shows a cross section of one embodiment of the present invention.

18) page 9, the first two paragraphs, replace these paragraphs with the following two paragraphs:

The processing steps for making the alignment posts and optical interference layers by means of the various methods of the invention are shown in Figs. 4 to 20.

4/16

Starting with Fig. 4, there is shown the cross section of a substrate 9 on the surface of which a sequence of layers of semiconductor materials is deposited, as follows: the conductive metallic (or poly) layer 30 is formed over the layer 40 of silicon oxide, which is formed over the surface of a first metal layer 41, Fig. 5,. Prior to formation of the layer 40 of silicon oxide, the metal bond pad 20, Fig. 5, is created on the surface of layer 41 of first level metal. The silicon semiconductor substrate 9 is coated with an insulating layer 16 of silicon dioxide and has active devices in layer 15 in or on the surface of substrate 9. Then a photoresist layer (not shown) is formed over the layer 30 of second metal to pattern and etch pixels 30. The photoresist (not shown) is exposed and a portion removed such that each pixel 30 retains a metallic layer, which acts as a mirror reflector for light incident upon pixel 30.

19) page 11, last paragraph, replace this paragraph with the following paragraph:

A silicon oxide layer 110, about 1 micron thick, is deposited on top of the OIL 60, as shown in Fig. 11. The photomask is formed over the oxide, except the location of each alignment post, and a plasma oxide etching is used to remove the silicon oxide not covered by the photomask, creating cavities 120, including some or all of the OIL at the base of the post cavity. Subsequently the post cavities 120 are filled with silicon nitride 121 deposited by plasma enhanced chemical vapor deposition (PECVD). The plasma enhancement provides low temperature deposition of about 200 degrees centigrade lower than conventional PECVD deposition of a layer of silicon nitride. Without the plasma, the nitride deposition is in the range of 700 degrees centigrade.

20) page 9, after the last paragraph, please add the paragraph:

The processing steps that are presented in Figs. 4 through 6 can be summarized as follows;

- the process starts with a silicon semiconductor wafer 9 having a pattern 15 of active device structures therein and thereon
- (optionally) a layer 16 of insulation material is formed over

the surface of wafer 9

- a first metallic layer 41 is formed over the surface of the layer 16 of insulating material
- a second metallic layer 20 is formed over the surface of the silicon oxide insulation layer, this layer 20 is patterned and etched, forming bond pad 20 and interconnect points (not shown in Figs. 4-6) over the surface of the first layer 41 of metal
- a silicon dioxide insulation layer 40 is formed over the first metallic layer 41, including the surface of the created bond pad 20 and interconnect points
- a third metallic layer 30 is formed over the surface of the silicon dioxide insulation layer 40
- a photoresist mask (not shown in Figs. 4-6) is formed over the third metallic layer 30, having a covering over the planned pixel locations of the liquid-crystal-on-silicon display device
- the third metallic layer 30 that is not covered by the photoresist mask is removed
- the photoresist mask is removed to provided such that each pixel 30 retains the metallic layer 30, which acts as a mirror reflector for light incident upon the liquid-crystal-on-silicon display device
- an optical interference layer 60, comprising silicon